Management Plan for the Chisana Caribou Herd 2010-2015

DRAFT PLAN for Public Consultation

Prepared by:
Chisana Caribou Herd Working Group

March 2010

DISCLAIMER

This management plan shall not create any commitments or obligations that are legally binding on the planning participants or create or affect any legal rights of the planning participants. Without limiting the generality of the foregoing, this management plan shall not create, affect, define, interpret or apply any roles, responsibilities, rights or interests under a Yukon First Nation Final Agreement.

Modifications to the plan may be necessary to include new objectives or findings.

This plan may be cited as:
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EXECUTIVE SUMMARY

The Chisana caribou herd (CCH) is a small international herd occurring in Yukon and Alaska on the Klutlan Plateau and near the headwaters of the White River. During the 1990's through 2003, the herd experienced a long and steady decline in population. Low recruitment, predation, climate, habitat, and harvest pressure likely all contributed to the decline. From 2003 to 2006, a recovery effort designed to increase recruitment and calf survival was conducted. Pregnant cows were captured and enclosed within a holding pen during the last weeks of gestation and a few weeks following calving.

During recovery planning and upon the completion of the program, the need for a management plan was stressed by the recovery team. As a result, a working group was established to develop a management plan for the CCH in 2009. This working group was comprised of members from Government of Yukon, Alaska Department of Fish and Game, White River First Nation, Kluane First Nation, U. S. National Park Service, and the U. S. Fish and Wildlife Service.

Diverse management mandates and interests for managing Chisana caribou were considered, and as a result the working group jointly produced this management plan with the ultimate goal of supporting a stable or increasing population. The objectives, actions and tasks described herein are associated with population monitoring, harvest, habitat, predation, research, and public awareness.

This five-year plan intends to coordinate the work of these management authorities to guide the management of the CCH.

ACKNOWLEDGMENTS

Through cooperation and mutual respect among the management authorities, a management plan that reflects the values and interests of each of the parties was created. Appreciation is also extended to the U.S. Geological Survey and the Canadian Wildlife Service for the provision of input and support throughout the duration of the planning process.

TABLE OF CONTENTS

TABLE OF FIGURES

RESPONSIBLE AGENCIES AND JURISDICTIONS

As an international herd ranging across multiple jurisdictions, a number of responsible agencies (management authorities) have either a management interest or authority over Chisana caribou (Figure 1). The legislation, regulations, policies, and management directions in place to manage ungulate species, such as caribou, are complex and differ between Yukon and Alaska.

In Alaska, the Chisana caribou herd (CCH)[1] ranges over state-owned land and within the boundaries of Tetlin National Wildlife Refuge (TNWR) and Wrangell-St. Elias National Park and Preserve (WSEPP). Both the TNWR and WSEPP represent federal agencies—the United States Fish and Wildlife Service (USFWS) and the United States National Park Service (USNPS) respectively. These federal bodies have the mandate to coordinate research, population monitoring, wildlife viewing, public education and awareness, and conservation of wildlife and other resources, including caribou within their boundaries.

Although these federal agencies do not have the authority to implement harvest, they can submit proposals to the Alaska Board of Game (ABOG) or the Federal Subsistence Board (FSB), or alternatively, comment on proposals that have been submitted by others. The ABOG receives, reviews, and makes decisions regarding state-regulated wildlife harvest, whereas the FSB manages the harvest by local subsistence hunters on federal public lands. The USNPS and the USFWS have the authority to close a harvest on caribou, within their boundaries, if they feel a particular herd is at risk under certain conditions. This may include obtaining records that would indicate a harvest is not sustainable, including but not limited to information acquired from monitoring activities, research, or harvest reporting. The *Alaska National Interest Lands Conservation Act* (ANILCA) states that federal agencies must give harvest priority to federally qualified subsistence users if harvest occurs on federal lands. State authorized hunting can be allowed on federal lands when the available harvest quota exceeds the level needed to provide a reasonable opportunity to federal subsistence users. USNPS policy also requires that natural processes be maintained for the benefit of wildlife populations to the greatest extent possible, while still providing for subsistence and recreational harvest as directed by ANILCA.

The Alaska Department of Fish and Game (ADFG), which has a role in managing caribou on state lands, private lands, and most federal lands, may also submit or comment on harvest proposals to the ABOG. The ADFG manages caribou for a variety of uses including wildlife viewing, monitoring and harvest, but the extent to which these management activities occur, varies among herds. Depending on events that could have negative implications for the CCH, the ADFG also has the ability to issue an emergency order to close a state-managed hunt.

In Yukon, the CCH ranges within the boundaries of Kluane Wildlife Sanctuary (KWS) and Asi Keyi Natural Environment Park (AKNEP) and across First Nation settlement land and within the traditional territories of the White River First Nation (WFRN) and the

[1] For a complete list of acronyms included in this plan, and their definitions, refer to appendix A.

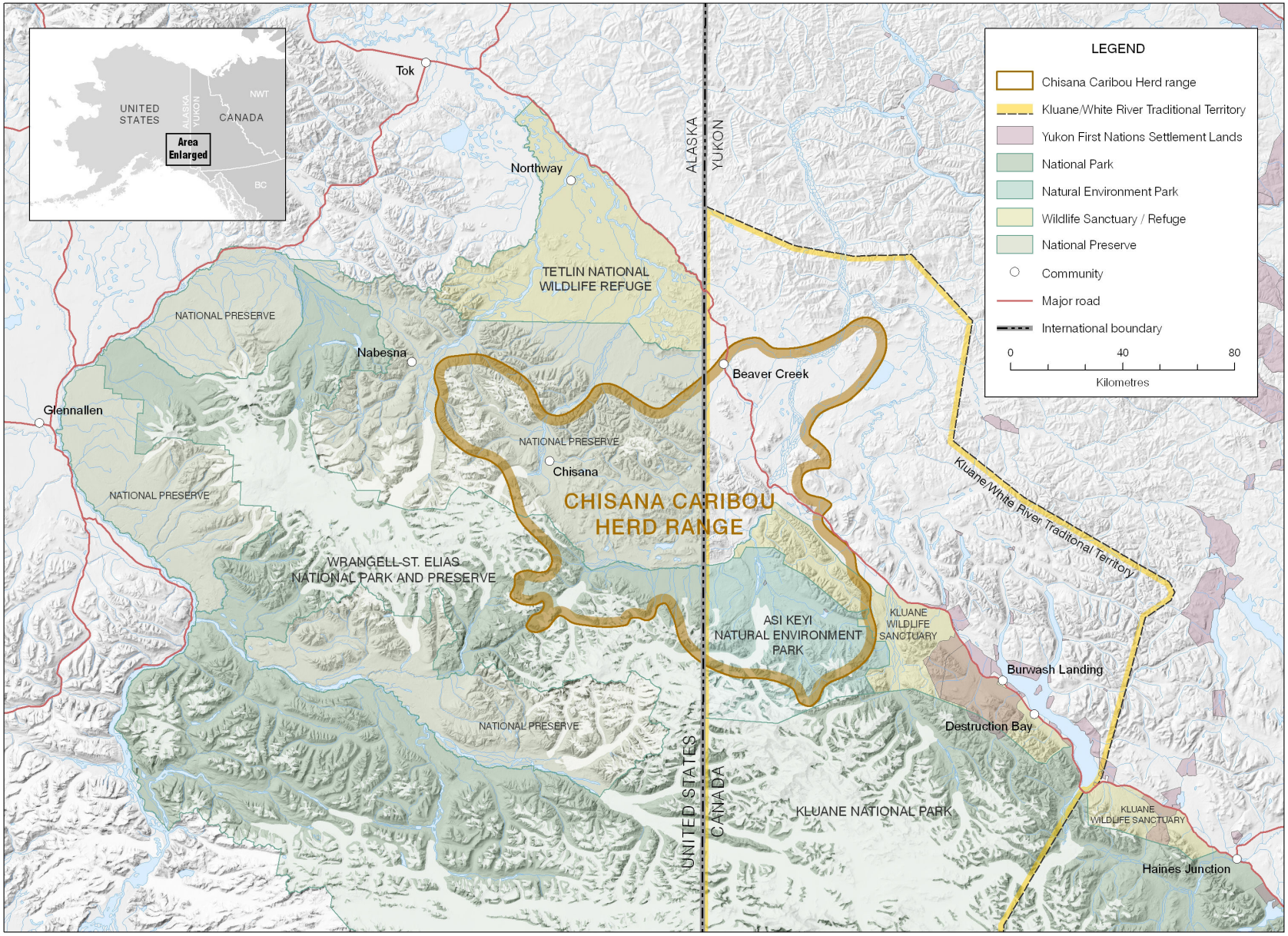

Figure 1. Annual range of the Chisana caribou herd and overlapping political boundaries in Alaska and Yukon Territory. Herd range is based on radio collar locations from 1988-2008 and survey observations by USGS and Environment Yukon from 1978-1983.

Kluane First Nation (KFN). KFN is a self-governing First Nation and has the ability to manage resources on their settlement land. WRFN has a traditional territory that overlaps exactly with that of KFN, but do not have a signed final agreement. Both First Nations were actively involved in the recovery effort for Chisana caribou and have an ongoing interest in the management of the CCH. Pursuant to the KFN Final Agreement the Dan Keyi Renewable Resource Council (DKRRC) was recently formed, and they are being engaged in this planning process.

On territorial land, including KWS and AKNEP (currently undergoing management planning pursuant to the KFN Final Agreement), the Yukon Government (YG) is the sole responsible authority for coordinating research and monitoring, wildlife viewing, harvest management and enforcement, and public education. YG has the ability to initiate and close harvest of wildlife populations. However, under the mandate of the Umbrella Final Agreement (UFA), which is the over-arching agreement for all Yukon First Nation final agreements, YG is required to consult with First Nations and the Yukon Fish and Wildlife Management Board (YFWMB) on management decisions, especially as they relate to harvest.

The Canadian Wildlife Service (CWS) enforces the Canadian federal *Species at Risk Act* (SARA) and cooperates in the management of international wildlife populations. Under SARA, the Northern Mountain Caribou (NMC) population, which includes the CCH, has been designated a species of "*Special Concern*". The CWS and YG are developing a management plan for the NMC population with other planning partners. Preparation of a management plan for CCH complements the broader recommendations of the NMC plan, but is tailored to suit the management needs of the CCH.

DEVELOPING THE PLAN

For the purpose of developing this management plan, a working group[2] was established with participants from WSEPP, TNWR, ADFG, YG, WRFN, and KFN. The purpose of the working group was to assemble and discuss existing information pertaining to Chisana caribou, and to subsequently recommend a management plan to the management authorities.

In January 2009, a preliminary meeting via conference call was held to discuss issues and concerns regarding the Chisana caribou that were seen to be important and requiring attention in the management plan. These issues, along with timelines for completing the plan, were discussed. A meeting to discuss and develop a draft management plan was held February 17-18 in Tok, AK.

A list of management planning issues was addressed by the working group over the two-day workshop in Tok. In early April, additional discussion occurred with research experts from the United States Geological Survey (USGS) who had been involved in much of the

[2] For a list of working group participants, refer to appendix B, and for the memorandum of understanding that guided the development of this plan, refer to appendix C.

population monitoring of the herd during and after the recovery program. A draft of the management plan was completed for review by the working group in late April.

The plan approval and consultation process varies by jurisdiction. WSEPP needs to consult with the Chistochina and Mentasta Tribal Councils, the Eastern Interior Regional Advisory Council (RAC), the South-central RAC and the Wrangell-St. Elias Subsistence Resource Commission (SRC). Consultation with the RACs and SRC would have to occur during a scheduled meeting typically between mid-September and October. Alaska Department of Fish & Game (ADFG) would present the working draft plan to the Alaska Board of Game (ABOG) and consult the public, including the Upper Tanana/Fortymile Fish and Game Advisory Committee. On the Canadian side, YG will work closely with WRFN and KFN and the Dan Keyi Renewable Resource Council (DKRRC).

This plan represents a comprehensive assessment of all existing information and knowledge pertaining to the CCH. Input and scrutiny from the working group and research experts has been considered.

CHISANA CARIBOU HERD

CURRENT STATUS

Based on census information from Adams and Roffler (2005 and 2007), the herd appears to be stable between 694 and 766 animals, but an additional census would further validate that trend. Based on data collected in the 2008 annual fall composition survey (Alaska Department of Fish and Game, unpublished data)[3], there is an estimated 44 bulls per 100 cows—a substantial increase from the all time low in 1999 when there were only 17 bulls per 100 cows. Estimates of recruitment from the 2008 composition count indicate that there are approximately 21 calves per 100 cows, which is consistent with most mountain caribou herds in Canada which average between 20 and 25 calves. In the fall 2009 composition survey, however, that ratio declined to 15 calves per 100 cows, while the bull/cow ratio increased to 48:100 (Alaska Department of Fish and Game and Yukon Fish and Wildlife Branch, unpublished data).

In Canada, a management plan is being developed for the Northern Mountain Caribou (NMC) population which is designated a species of "*Special Concern*" under the federal *Species at Risk Act* (SARA). This population includes 36 discrete herds, including Chisana. In 2002, the herd was designated as "*Specially Protected*" under the Yukon *Wildlife Act* following a request from the White River and Kluane First Nations. This designation prohibits all licensed harvest of the CCH and requires a regulation change to initiate a harvest. Both White River and Kluane First Nations have voluntarily agreed not to hunt the CCH.

[3] For more information on survey techniques and results summaries, contact the Alaska Department of Fish and Game in Tok, AK.

RANGE

Due to the topography of the region, the CCH is generally aligned along a northwest-southeast direction in east-central Alaska, U.S.A. and southwest Yukon, Canada (Figure 1). The summer range is predominately within WSEPP in Alaska, but the winter range has a larger proportion of the herd occurring in AKNEP. Occasionally the herd has mixed with the Nelchina caribou herd to the northwest in Alaska and north to Beaver Creek, Yukon.

The herd range is within the St. Elias Mountains ecoregion, which is distinguished by rugged and glaciated mountains with high peaks (Ecological Stratification Working Group 1995). The Donjek, Generc, White, Chisana, and Nabesna rivers drain the range, and treeline generally occurs at 1,050–1,200 m. White spruce and black spruce are the most commonly occurring trees on well-drained soils and in poorly drained areas respectively. In lowland portions of the range, paper birch, aspen, and balsam poplar are more prominent. The understory includes willow, dwarf birch, soapberry, and ericaceous shrubs. Sedge–tussock fields are common in poorly drained sites and gentle slopes, while the steeper slopes support mosses, alpine forbs, ericaceous shrubs, grasses, and lichens. This range is somewhat unique because of the deep ground layer of volcanic ash from the Mount Churchill eruption 1,200 years ago.

HEALTH AND GENETICS

The limiting role of disease and parasites on the CCH is poorly understood. Based on samples taken in the 1990's, there is a low diversity, prevalence, and intensity of gastrointestinal parasites in the CCH, as well as an absence of evidence for bovine respiratory viruses such as Brucellosis (Farnell and Gardner 2002). There is a lack of data on parasite presence from mid to late summer periods when there is a higher probability of detecting eggs and evaluating parasite intensity. Overall, recent information suggests that the health of CCH is favorable with respect to viruses and parasites, and that any past documentation of disease has not been attributed to observed population trends over time (Farnell and Gardner 2002).

The body condition of adult Chisana caribou scored average to above-average, when compared to other Yukon woodland caribou herds, and does not suggest that CCH physical condition was unfavorable for the years they were examined (Farnell and Gardner 2002). The average fall calf weight for the CCH between 1998 and 2000 was 64.1 kg – the highest recorded for Alaskan caribou with varying nutritional status (Valkenburg *et al.* 2000, C. Gardner, unpublished data). Relative to other Alaskan caribou herds, these data indicate favorable physical condition and good health among calves surviving the neonatal period.

In Canada, the Chisana herd is classified taxonomically as *Rangifer tarandus caribou,* and is grouped under the Northern Mountain ecotype of woodland caribou. Behaviourally, the Chisana herd is typical of other mountain herds, particularly with respect to calving where, rather than calving females aggregating in certain areas, they

disperse up in elevation and away from other calving females as an anti-predation strategy. In Alaska, the Chisana herd is classified as *Rangifer tarandus grantii.* From a management standpoint, this difference in classification between Canada and the U.S. does not influence the management recommendations set out in this plan for the Chisana caribou herd.

LIMITING FACTORS

Habitat and Climate

The winter diet of the CCH is high in moss and low in lichen compared to other Yukon herds from 1981-2001 (Farnell and Gardner 2002). The region has a very high habitat composition of moss and has been anecdotally described as very poor caribou habitat (B. Collins, pers. comm.). The high proportion of moss raises questions about the adequacy of winter forage quality and winter range condition for the CCH because mosses have extremely low nutritional value and digestibility compared to lichens.

Severe weather can have implications for adult and calf physical condition. Poor winter nutrition could lead to lower calf birth weights, reduced development rates, and decreased survival (Espmark 1980, Adams *et al.* 1995). Evidence from Alaska shows that the poor winters in the early 1990's affected the nutritional status of affected caribou herds (Valkenburg *et al.* 1996), and therefore may have limited the growth of these herds during those times. Winters with excess snow also make it harder for the caribou to access quality forage and increases the energetic demands of movement. Years in which snow levels remain high during the calving season may also prevent females from moving up in elevation, thus increasing predation on neonate calves. Warmer drier summers may also adversely affect the CCH by increasing insect harassment and decreasing nitrogen content in caribou forage. Heavy surface deposits of volcanic ash throughout much of the herd range may lead to increased early tooth wear and this may have effects on longevity and health.

Predation

Predation by wolves is a primary force limiting caribou in Alaska (Gasaway *et al.* 1983, 1992; Ballard *et al.* 1987; Bourtje *et al.* 1996) and Yukon (Gauthier and Theberge 1985, Farnell and McDonald 1988, Hayes *et al.* 2003). Wolves however, have not been limited by decreases in Chisana caribou due to the availability of moose and Dall's sheep. The low numbers of wolves taken by trappers and hunters in the CCH range are generally not sufficient enough to limit wolf density. At 5.6 animals per 1000 km^2, the most recent wolf density estimates is below the average for Alaska and Yukon study sites (9 wolves per1,000 km^2; Gasaway *et al.* 1992).

Grizzly bears are known to prey on caribou, but their impact on Chisana caribou is unknown. Grizzly bear densities are approximately 16-18 animals per 1000 km^2 in the CCH range (Gardner, unpublished data).

Lynx and coyote are periodically abundant following snowshoe hare population trends. Wolverines and golden eagles are also present at unknown densities in the CCH range (Farnell and Gardner 2002).

Human Factors

The CCH range is remote and there are few issues related to access. There are no roads into the range and all-terrain vehicles generally are not used in the area. Access to the area is easiest by snowmobile or aircraft, but occurs infrequently.

Few people in Alaska or Yukon depend on Chisana caribou as their primary source of food. Most harvesting has occurred from big game outfitters in Alaska and Yukon, and subsistence hunting by local First Nations. Harvest from 1975 to 1994 ranged between 13-65 animals in Alaska, and 0-18 animals in Yukon (Yukon government and Alaska Department of Fish and Game, unpublished data). A ban on licensed hunting, as well as a voluntary ban on First Nation harvest, has been in place since 1994 in Yukon and Alaska. Following a request by White River and Kluane First Nations, all forms of licensed harvest have been legally prohibited in Yukon under the *Wildlife Act* since 2002, and now require a regulation change to initiate a hunt on the CCH.

RECOVERY PROGRAM

Following a sharp decline of the CCH in the 1990's to early 2000's, a recovery effort was initiated in joint cooperation between partners from Yukon and Alaska. From 2003-2006, pregnant cows were captured in late-winter and transferred to a holding pen within their natural range. The pen was protected from predators, allowing these animals to safely endure calving and neonatal periods, before being released back into the range. Over the four-year recovery period, 136 calves were released from the pen. Radio-telemetry was used to monitor the survival of both caribou calves raised in the pen and those born in the wild. By excluding predators, calf survival was greatly enhanced through the use of the holding pen, and may have helped to offset further decline in the herd.

CURRENT RESEARCH

Telemetry has been used to monitor the herd's seasonal movements and facilitate annual composition counts, population estimates, and estimates of birth rates and adult mortality. Since 1987 both adult female and calf caribou have been radio-collared to maintain a sample of approximately 10–25 animals. Because of the intensive recovery efforts, all captured cows and calves, held within the pen, were also collared. Based on 2008 data from the fall composition count, there are now approximately 131 active radio telemetry collars remaining on animals within the CCH.

From 1987 to 2001, annual herd composition surveys were conducted in the fall and herd censuses were conducted during the summers of 1989-1995 and 1997, when the herd formed post-calving aggregations. The most recent censuses have occurred during the fall rut in 2005 and 2007. And in October of 2008 and 2009, herd composition counts were conducted.

MANAGEMENT GOALS AND PRINCIPLES

PLAN PRINCIPLES

The following sets out principles to guide the management of the CCH and implementation of this management plan:

1. Plan implementation must recognize and respect the government relationships that exist between traditional and historic users, and First Nation, federal, territorial, and state governments.

2. Management of the Chisana caribou herd must respect the mandates of each management authority.

3. Management of the herd and its habitat will depend on the ability of management authorities to develop and implement cost-effective and timely programs and approaches.

4. Management must use the best available information and respect traditional, local, and scientific knowledge.

5. Management of the herd relies on the health of all ecosystem components that support the herd.

6. Consistent with the precautionary principle, required management actions should not be delayed even if detailed information is limited or lacking. Caution must be exercised to avoid potential effects of human activities to the caribou herd and its habitat.

7. Where possible, this plan will support and be consistent with the Canadian federal *Species at Risk* Management Plan for the Northern Mountain Caribou population.

8. Implementation of this management plan requires commitment, coordination, and collaboration among management authorities and First Nations.

MANAGEMENT GOAL

Through discussions the working group participants arrived at the following goal for the management of Chisana caribou:

The management authorities will implement management actions that support a stable or increasing population, and recognize the natural limiting factors that affect the herd. This will be measured through continued monitoring of sex ratios, calf recruitment and population size.

MANAGEMENT OBJECTIVES AND ACTIONS

POPULATION MONITORING

Objective 1: Regularly monitor the CCH, track population trends, sex ratios and recruitment, and maintain a herd that is stable to increasing.

Considering recent recovery efforts, the international significance, and the importance of the herd to First Nations and residents of Yukon and Alaska, a cautious approach is being taken to manage the CCH which requires consistent and ongoing monitoring. It is therefore, important to support a stable or increasing population.

Action 1.1: Conduct regular monitoring of the herd

To best adhere to the population management goals and indicators, regular monitoring will be required. At least one census is recommended to occur within the life of this plan, and as early as possible to best complement the censuses conducted in 2005 and 2007. Annual fall composition surveys should be conducted in years when censuses do not occur, and annual to semi-annual telemetry flights should be conducted in coordination with other monitoring where possible, as described above.

Recommended Task	Who
Conduct a minimum of one herd census within the life of this plan. Aim to conduct first census in 2010.	ADFG, WSEPP, YG, TNWR
Conduct annual composition surveys except in years when a census is conducted.	ADFG, WSEPP, YG, TNWR
Conduct 1-2 telemetry flights per year	ADFG, WSEPP, YG, TNWR
Coordinate the recovery of collars from dead caribou during annual composition counts or telemetry surveys	ADFG, WSEPP, YG, TNWR
Coordinate the distribution of results summaries to working group members, USGS, and Environment Canada	ADFG, WSEPP, YG, TNWR

Action 1.2: Coordinate with research scientists in Alaska to determine a protocol for monitoring Chisana caribou

The USGS is preparing a protocol for monitoring Chisana, Mentasta, and Denali caribou herds for the U.S. National Park Service. The protocol would include information on appropriate sample size for collars and a frequency schedule for composition counts and censuses. It will be the responsibility of the respective parks, WSEPP in the case of Chisana, to implement the protocol and coordinate resources. There are currently 131 collars left on the CCH and the best approach for maintaining a sample of active collars will be recommended in the protocol.

Recommended Task	Who
Coordinate with USGS during the development of a monitoring protocol for the CCH.	WSEPP, ADFG, YG, TNWR
Determine and identify available budget and staff resources	WSEPP, ADFG, YG, TNWR
Implement and maintain a collaring and monitoring program for a minimum sample of animals as per the monitoring protocol.	WSEPP, ADFG, YG, TNWR

HARVEST

Objective 2: Cooperatively manage harvest of the CCH with Yukon and Alaska management authorities to maintain a stable or increasing population.

Because of the herd's decline, all licensed hunting of the CCH has been restricted in Alaska and Yukon since 1994. At this time, Kluane and White River First Nations also issued a voluntary ban resulting in no subsistence harvesting of the CCH. In 2002, the herd was listed as a "*Specially Protected*" population under Yukon's *Wildlife Act.* All licensed hunting in Yukon continues to be legally prohibited under this designation; therefore initiating a harvest requires a regulation change under this legislation.

In spring 2008, the ABOG reviewed a proposal to reinstate harvest of the CCH. Considering the international significance of the herd, the ABOG did not approve the proposal and stressed the need to coordinate with management authorities in both countries before granting such requests. Following this decision, discussions around the feasibility of reinstating a harvest on the CCH have occurred between YG and ADFG.

Harvest of the CCH would be recommended following the determination that the herd is either stable or increasing, based on the proposed 2010 census. On average, mountain caribou herds in Canada average between 20-25 calves per 100 cows. Because recruitment can vary greatly among years, a rolling three-year average of less than 15

calves per 100 cows will trigger the cessation of harvest and a meeting of the management authorities. The three-year average is recommended by the working group as an indicator because it will notify management authorities that the herd may be declining, and it allows time to implement management action to limit further decline. Estimates of less than 35 bulls per 100 cows reported in any given year would also trigger a stop of the harvest and a meeting of the management authorities. These population indicators for management action are outlined in Figure 2.

Action 2.1: Dependent on results of a 2010 census, coordinate efforts among management agencies to recommend a harvest for the CCH

Three censuses are required to estimate a population trend in a herd. Because of the intensive recovery program, and cessation of hunting since 1994, a cautious approach is being taken with respect to reestablishing a hunt on the CCH. The working group will wait until a census is completed in 2010 to determine whether the herd is stable or increasing, and has a minimum sex ratio of 35 bulls to 100 cows. If these indicators are met, harvest of the CCH would be recommended to the management authorities. If a census cannot be completed by 2010, then herd stability, and subsequent harvest management decision, will be based on the next census to occur as soon as possible after 2010.

A recommended strategy for harvest allocation is presented in Appendix D.

If at any time after an approved hunt has been established, there is an indication that the population indicators fall below the set thresholds, harvest will cease and the management authorities will meet to discuss management options.

Recommended Task	**Who**
Based on 2010 census, working group will meet to determine if population trend and sex ratio meet the requirement to re-open the herd to hunting (Figure 2).	All
Should the population meet the required indicators, recommend to the responsible management authorities that the herd be permissible for harvest by 2011.	YG, ADFG, WSEPP, TNWR
Consider appropriate means for harvest allocation (see Appendix D for a proposed harvest allocation strategy).	YG, ADFG, WSEPP, KFN, WRFN
If required, remove designation of the CCH as "Specially Protected" under Yukon's *Wildlife Act.*	YG

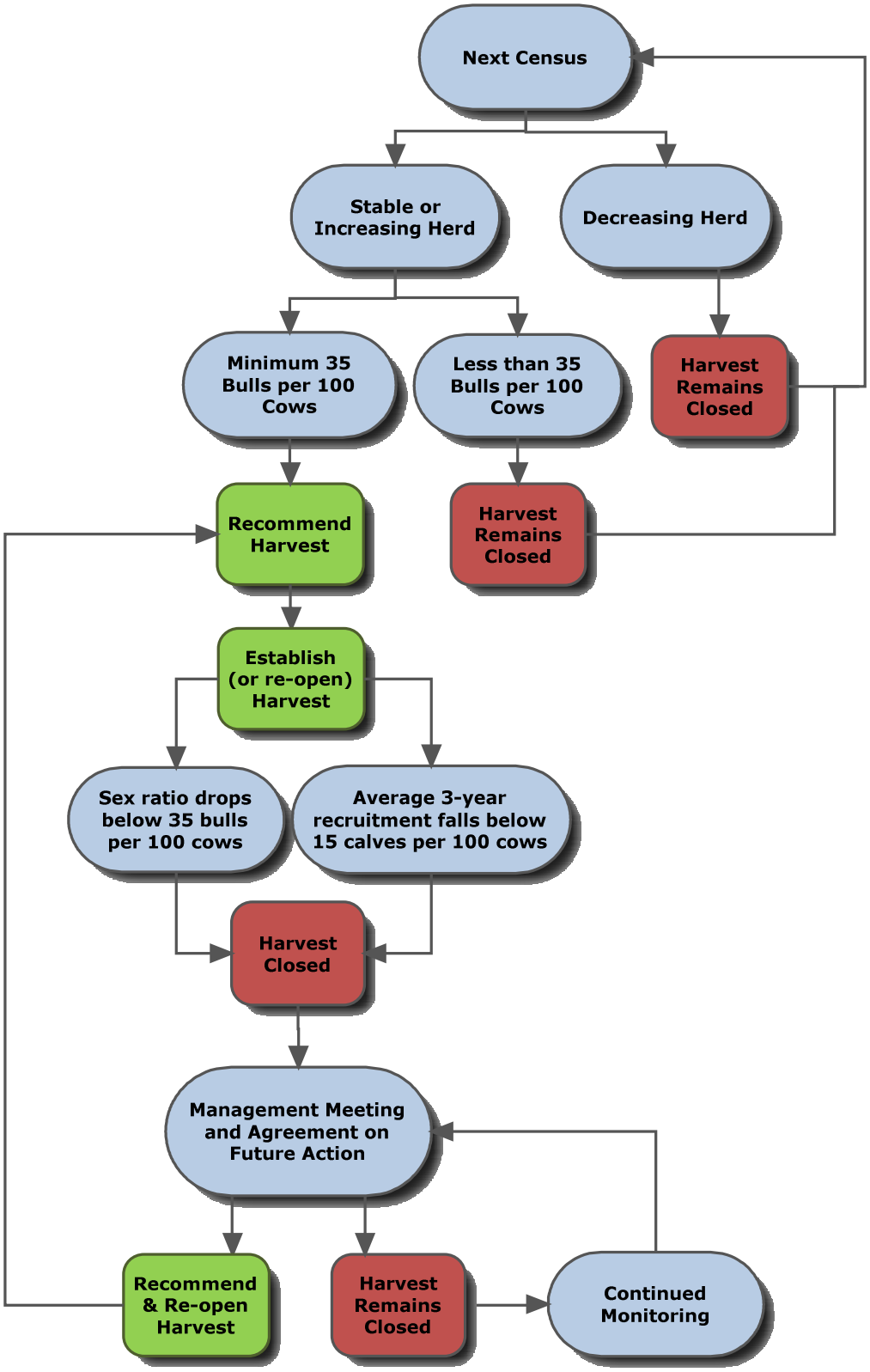

Figure 2. Chisana caribou herd indicators for harvest management actions.

Action 2.2: Based on continued monitoring of the CCH, as per the monitoring schedule above, close all harvest of the CCH when herd population trends and sex ratios fall below threshold indicators for maintaining a stable or increasing herd

If for any reason an observed three-year average of less than 15 calves per 100 cows, OR an annual sex ratio of less than 35 bulls per 100 cows occurs, any harvest would cease. Recommending re-opening the harvest after this event would depend on agreement among the management authorities regarding future management action for the CCH (Figure 2).

Recommended Task	Who
As per monitoring schedule in Table 1, continue to monitor herd through annual composition counts and set herd censuses.	YG, WSEPP, ADFG
Determine from annual composition counts or censuses if the population falls below threshold indicators (Table 1) for a safe and sustainable harvest.	YG, WSEPP, ADFG
Close the harvest of CCH in Yukon and Alaska if the population has fallen below indicators.	YG, WSEPP, ADFG

HABITAT

Objective 3: To better understand the relationship between vegetation on the landscape and the implications to Chisana caribou and other wildlife species.

Very little information exists with respect to habitat quality or habitat use and availability. The high ratio of moss to lichens within the core winter range suggests that this may be low quality caribou habitat. Changes in the tree line and increased shrub growth have been observed throughout the Chisana range; however the effects to Chisana caribou are unknown.

Action 3.1: Coordinate the collection of habitat information with other ongoing research and monitoring work in the CCH range

Throughout the life of this plan, telemetry flights, herd composition surveys and population censuses may occur within the CCH range. This provides the opportunity to

take advantage of circumstances that will allow the collection of more information on CCH diet, habitat, or vegetation.

Recommended Task	Who
When feasible, collect fecal pellets where possible during surveys or when recovering collars	YG, WSEPP
When feasible, collect baseline vegetation data where possible during surveys or when recovering collars	YG, WSEPP

Action 3.2: Encourage and take advantage of research opportunities to increase our current knowledge of habitat within the CCH range

Anecdotal information suggests that poor quality habitat and nutrient-limited food occur within the CCH winter range (B. Collins, pers. comm.). Despite this, there is a general lack of scientific habitat research that has occurred within the range. A number of research opportunities exist if funding or interested researchers become available. These opportunities include but are not limited to:

1. Changing shrub and tree lines and implications to predator-prey dynamics

   There have been observations that the brush-line is moving up in elevation on the Klutlan Plateau. Current research supports these observations in that warmer temperatures resulting from climatic changes will support the advancement of the shrub-line to higher elevations in much of the southwest Yukon (Danby and Hik, 2007). An increase in biomass of woody shrubs species could decrease the availability of alpine tundra habitat that caribou depend on (Sturm et. al., 2005). This may also provide additional habitat for moose at higher elevations and draw more wolves into core caribou habitat. There is some research occurring at present which is looking at patterns of shrub-line changes in the southwest Yukon (Myers-Smith, 2007), but the impacts to the CCH are largely unknown.

2. Habitat use and availability

   Moss is poor quality forage for caribou, and it has been observed at high composition throughout the CCH range compared to other Yukon and Alaskan herd ranges. This raises questions as to how the caribou are obtaining their required nutrients. Farnell and Gardner (2002) indicate that body conditions of caribou are similar to other herds, suggesting that they are getting the appropriate nutrients. There is interest in better understanding habitat use and availability within the CCH range.

3. Habitat and diet implications to tooth wear, health, and age structure of the herd.

During the recovery effort, a number of animals were reported with extensive tooth wear, suggesting the age-structure of the herd was skewed to older animals. It is possible that volcanic ash within the region may be quickening the rate of tooth wear in animals. If animals are dying younger because of hastened tooth wear, the reproductive period for cow caribou is shortened. The implications to the overall health of the herd are not well understood.

Recommended Task	Who
Where possible, engage with academic institutions that may have interested graduate students and address research questions.	All
Identify available sources of funding that could be used to fund habitat-related research in the CCH range, as needed.	All

PREDATION

Objective 4: Obtain more current information on predators in the CCH range to advance our understanding of predators as limiting factors on the CCH.

To understand the limiting effect of predation on Chisana caribou, current information is needed on wolf and bear numbers in the region. This will help managers evaluate effects to the herd so that appropriate management decisions can be made.

Bears were considered in the development of this plan, but due to constraints on time and resources no recommended management actions for bears are presented in this plan.

Action 4.1: Conduct one wolf census within the life of this plan

The density of approximately 6 wolves per 1000 km^2 is below average for interior Alaska and southwest Yukon (Gasaway *et al.* 1992; A. Baer, Yukon Government, unpublished data). However; the estimate for the core CCH range may be even lower, because a number of larger packs, located on the periphery of the CCH range, were included in this estimate. Although wolves are a limiting factor on caribou, it is not known how the densities of wolves in the area actually affect the CCH. Ideally, surveying wolves once every 5-6 years would be sufficient to evaluate trends in their populations and assess their influence on the CCH. The working group recommends that a wolf survey occur early within the life of this plan.

Recommended Task	Lead
Conduct survey of wolves in Yukon and Alaska portions of CCH range	YG, ADFG, WSEPP
Complete survey report and plain language document	YG, ADFG, WSEPP
Compare wolf census data with trends in CCH statistics.	YG, ADFG, WSEPP

RESEARCH

Objective 5: Continue to learn more about the CCH and its range so that management agencies are able to make well informed decisions.

A number of observations have been made in recent years that highlight opportunities for further research in the region. This research could advance the ability of managers to make better decisions for the benefit of the CCH. There are potential sources of funding available within and outside each of the management authorities.

Action 5.1: Promote and take advantage of research opportunities within the CCH range

A number of research opportunities exist if funding or interested researchers become available. These research topics, in addition to those already mentioned above in habitat include but are not limited to:

1. Climate conditions and weather station analysis.

   Climate is a long term monitoring vital sign for WESPP. Through the USNPS Inventory and Monitoring Program, 5 newly established Remote Automated Weather Stations (RAWS) have been strategically placed at high elevations and in remote areas within WSEPP, some of which supplement existing low elevation stations located near population centers. One of these RAWS is located within the core range of the CCH. These stations record hourly air temperature, relative humidity, wind speed and direction, solar radiation, snow depth, soil temperatures, and summer rain. There is an opportunity to use this data and the analysis provided by USNPS sponsored climate scientists for comparison to population trends of the CCH.

2. Genetics and what determines a barren ground caribou from a woodland caribou.

   Alaska and Yukon classify Chisana caribou differently as barren-ground and woodland caribou respectively. There is interest in determining what genetic

factors separate woodland caribou from barren-ground caribou and where Chisana caribou fall taxonomically.

3. Changing predatory-prey dynamics and implications to Chisana caribou.

   Predation by wolves is a primary force limiting caribou in Alaska (Gasaway *et al.* 1983, 1992; Ballard *et al.* 1987; Bourtje *et al.* 1996) and Yukon (Gauthier and Theberge 1985, Farnell and McDonald 1988, Hayes *et al.* 2003), but wolves have not been limited by decreases in Chisana caribou due to the availability of moose and Dall's sheep. If there have been changes in densities of other prey species such as moose or sheep, wolves within the Chisana region may be affected. This may in turn also affect the CCH specifically.

Recommended Task	**Who**
Where possible, engage with academic institutions that may have interested graduate students and address research questions.	All
Identify available sources of funding that could be used to fund research in the CCH range, as needed.	All

Action 5.2: Conduct one moose survey within the life of this plan

Changing vegetation patterns may affect both moose and wolf numbers in the area. Alaskan guides report more moose in the area and feel the wolves may be focusing on moose rather than caribou (T. Overly and U. E. Rayhol pers. comm.). The working group recommends that one moose survey occur within the life of this plan depending on available resources. This will provide some understanding of changes in the density of alternative prey species within the CCH range.

Recommended Task	**Who**
Conduct one moose survey within the life of this plan	YG, ADFG, WSEPP
Analyze data and provide written summary of results	YG, ADFG, WSEPP
Compare results to recent census information from wolves and the CCH.	YG, ADFG, WSEPP

PUBLIC AWARENESS

Objective 6: Inform the public, First Nations, and key interest groups about the status of current initiatives, conservation, and population trends for the CCH.

Due to the international attention the CCH has received, as well as the recovery efforts of multiple individuals, governments, agencies, and First Nations, there is ongoing support and desire for the continued longevity and health of the herd. As such, there is a need to develop and communicate appropriate key messages at critical times for people or groups with an interest in the herd. These could include local communities, First Nations, tribal councils, outfitters, boards and councils, youth, non-government organizations, and the general public.

Action 6.1: Develop and implement a communication plan for CCH

Communication with the public regarding the status of the herd, past recovery efforts, and its potential vulnerability to harvest will support management of this herd. Critical times for implementing communication objectives would include when a hunt is initiated or closed and during new research or survey initiatives occurring within the CCH range. Engagement of the public through existing programs offered by the management authorities is an efficient way to do so. Additional work in communities near the herd's range will provide opportunities for local input to management.

Recommended Task	Who
Develop communication plan and identify target audiences and key messaging	All
Identify budgets and resources for implementing communication objectives	All
Share information about herd management.	All

Action 6.2: Coordinate awareness and communication, at critical periods, to the public and interested groups regarding harvest of the CCH

Communicating the rationale behind decisions to allow harvest of the CCH, or not, will be necessary in building awareness for the CCH and the cautious management approach that the management authorities are taking.

Recommended Task	Who
Develop and distribute appropriate communications to interested groups regarding the opening of a hunt on CCH	All

Develop and distribute appropriate communications to interested groups regarding the closure of a hunt on CCH	All

IMPLEMENTATION, REVIEW, AND REVISION

Objective 7: Implement the plan in a collaborative and timely manner.

To date, management of this herd has drawn on the collaborative efforts and shared interest to maintain a healthy herd size. For this plan to be effectively implemented, maintenance of the ongoing relationships that have been built through the recovery planning initiative, and subsequently in developing this plan, is required.

Action 7.1: Implement the plan in a manner that improves cooperation and communication among partners

The Chisana caribou herd is a shared resource—cooperation, communication, and trust will enhance our ability to manage the herd most effectively. Because management of the CCH is the responsibility of multiple management authorities, there is an opportunity to share resources and coordinate efforts among the different agencies.

Recommended Task	**Who**
Inform partnering management authorities regarding the availability of resources for implementing various sections of the plan including monitoring and research.	All
Communicate and share new information, as it may become available	YG, ADFG. WSEPP. TNWR

Action 7.2: Review and renew the plan in a timely manner

Plan reviews provide the opportunity for the management authorities to check in and revise management direction if needed, particularly if new information about the CCH is available. A review is recommended at the end of five years of plan implementation. At that time, the plan may be extended upon mutual agreement by the management authorities.

Recommended Task	**Who**
Review the status of actions included within this plan.	All
Renew or extend plan. Priorities and budgets should be identified during review.	All

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APPENDICES

APPENDIX A: LIST OF ACRONYMS

ABOG	Alaska Board of Game
ADFG	Alaska Department of Fish and Game
AKNEP	Asi Keyi Natural Environment Park
ANILCA	Alaska National Interest Lands Conservation Act
CCH	Chisana Caribou Herd
CWS	Canadian Wildlife Service
DKRRC	Dan Keyi Renewable Resource Council
FSB	Federal Subsistence Board
KFN	Kluane First Nation
KWS	Kluane Wildlife Sanctuary
NMC	Northern Mountain Caribou
RAWS	Remote Automated Weather Stations
SARA	Species at Risk Act (Canada)
TNWR	Tetlin National Wildlife Refuge
WRFN	White River First Nation
WSEPP	Wrangell-St. Elias National Park and Preserve
UFA	Umbrella Final Agreement
USNPS	U.S. National Park Service
USFWS	U.S. Fish and Wildlife Service
YFWMB	Yukon Fish and Wildlife Management Board
YG	Yukon Government

APPENDIX B: WORKING GROUP PARTICIPANTS

Name	Title	Affiliation
Jeff Gross	Area Wildlife Biologist	Alaska Department of Fish and Game
Torsten Bentzen	Assistant Area Wildlife Biologist	Alaska Department of Fish and Game
Judy Putera	Wildlife Biologist	Wrangell-St. Elias National Park and Preserve
Tony Booth	Refuge Manager	Tetlin National Wildlife Refuge
Hank Timm	General Wildlife Biologist	Tetlin National Wildlife Refuge
Chief David Johnny	Chief	White River First Nation
Geraldine Pope	Director, Renewable Resources	Kluane First Nation
Troy Hegel	Caribou Biologist	Yukon Environment - Fish and Wildlife Branch
Shawn Taylor	Kluane Regional Biologist	Yukon Environment - Fish and Wildlife Branch
Lorne Larocque	Kluane Fish and Wildlife Technician	Yukon Environment - Fish and Wildlife Branch
Karen Clyde	Habitat Manager	Yukon Environment - Fish and Wildlife Branch
Amy Leach	Fish and Wildlife Planner	Yukon Environment - Fish and Wildlife Branch

APPENDIX C: WORKING GROUP MOU

Memorandum of Understanding
on the Drafting of a Plan to Manage the Chisana Caribou Herd

Between

Government of Yukon,
as represented by the Department of Environment

And

White River First Nation,

And

Kluane First Nation,

And

Alaska Department of Fish and Game

And

U.S. Fish and Wildlife Service,
as represented by the Tetlin National Wildlife Refuge

And

U.S. National Park Service,
as represented by the Wrangell St. Elias National Park and Preserve

being the parties ("Parties") to this Memorandum of Understanding

A. PURPOSE

1. The Chisana Caribou Herd (CCH) is a small herd whose home range expands across the Yukon and Alaska border. Intense recovery planning and management has brought the herd back to a stable population. During recovery planning and upon the completion of the program, the need for a management plan was stressed by the recovery team.
2. The purpose of the working group will be to draft and recommend a management plan, for the CCH, for review, approval, and implementation by the responsible Parties.
3. The following guidelines are effective until the completion of a recommended plan.

B. OBJECTIVES

4. The objectives of the working group are to:
    a. be understanding and respectful of the jurisdictions, responsibilities, policies, and capacities of the working group members;
    b. provide a framework and process that ensures continuing communication, consultation and co-operation between the working group members;
    c. provide a process that ensures community involvement through consultation with the ultimate goal of recommending a management plan for the CCH to the appropriate parties;
    d. recommend to the appropriate responsible Parties a five-year management plan for the CCH and its habitat; and
    e. recommend a process of shared responsibility for the implementation of the plan.

C. ESTABLISHMENT OF THE WORKING GROUP

5. The working group will be comprised of one representative from each of the Parties.

D. DUTIES

6. The working group members shall be:
    a. responsible for keeping their respective Party contacts informed of the working group's activities on a regular basis, and seek direction as needed;
    b. responsible for attending and participating in working group meetings on a regular basis;
    c. responsible for providing current and relevant information to support the management planning process; and
    d. cooperate in good faith in developing a management plan for the management of Chisana caribou, which respects and recognizes the values and traditions of all planning participants.

E. PLAN CONTENTS

7. The management plan may address, but is not limited to the following:
    a. monitoring the status of the population and its habitat;
    b. habitat management and conservation;
    c. research priorities;
    d. harvest management;
    e. a process for implementation of the plan; and
    f. a process for review and revision of the plan.

F. FUNDING

8. The Parties agree to cover the costs of their participation on the working group in development and consultation of the plan.
9. The Government of Yukon shall provide meeting facilities for meetings held in the Yukon.
10. The Alaska Department of Fish and Game, the United Stated Fish and Wildlife Service, or the National Parks Service shall provide meeting facilities for meetings held in Alaska.

G. APPROVAL PROCESS

11. The working group will develop a draft plan for review by the Parties.
12. Following the Parties' review and approval, the working group will provide the draft plan for review to the public, the Yukon Fish and Wildlife Management Board, the Alaska Board of Game, and the Federal Subsistence Board.
13. The working group will review and consider comments received from those listed in clause 12, and make necessary changes to the management plan.
14. The working group will recommend the final plan to the appropriate Parties.
15. The appropriate Parties will coordinate on final approval and signing of the plan.

H. GENERAL

16. Implementation of the management plan will be subject to available funding and resources from each of the Parties.
17. This Memorandum of Understanding is intended by the Parties to be a record of their respective expectations and is not intended to create any legally enforceable rights or obligations.

Dated this _____ day of _____, 2010.

_____

Government of Yukon,

as represented by the Department of Environment

_____

White River First Nation,

as represented by _____

_____

Kluane First Nation,
as represented by _____

_____

Alaska Department of Fish and Game

_____

United States Fish and Wildlife Service,
as represented by the Tetlin National Wildlife Refuge

_____

National Park Service,
as represented by the Wrangell St. Elias National Park and Preserve

APPENDIX D: RECOMMENDED HARVEST ALLOCATION

Conservation of the Chisana caribou herd and its habitat is the overriding principle of this management plan. Because of the recent recovery efforts to stabilize this declining population, a cautious approach is being recommended with respect to harvest of Chisana caribou. As per the Yukon woodland caribou management guidelines, an annual harvest of 2-3% is recommended for stable to increasing herds greater than 200 animals. These guidelines are currently under review and may be amended as recent information is assessed. Because of the cautious approach taken by the working group and the sensitive nature of the CCH, the extensive recovery effort, and public support for management of this herd, a bulls-only harvest not exceeding 2% of the estimated population is recommended for Chisana caribou, providing that the census and annual composition data indicate a harvest is sustainable. A bulls-only harvest is expected to have the least impact on potential herd growth.

Based on survey and telemetry data from 1979-2008, Chisana caribou are relatively evenly distributed in Yukon and Alaska. For this reason, the working group recommends that the maximum annual allocation of 2% should be evenly distributed among Yukon and Alaska, with a maximum of 1% of the estimated population to each jurisdiction.

In Alaska, the Chisana caribou herd would be primarily within Wrangell- St. Elias National Preserve during any potential harvest. Generally, both state harvest and federal subsistence harvest is permitted in the federal preserve. Management of wildlife in Alaska is a state responsibility, however on federal lands it must be done in concert with federal mandates, which includes a federal subsistence priority for local rural residents over all other consumptive uses. Therefore, state authorized hunting can only be allowed when the available harvest quota exceeds the level needed to provide for federal subsistence needs. For these reasons, the Chisana caribou hunts and harvest allocation within Alaska would be determined through the respective federal (Federal Subsistence Board) and state (Alaska Board of Game) regulatory processes.

APPENDIX E: LIST OF MANAGEMENT PLAN ACTIONS

ACTION	DESCRIPTION	RECOMMENDED TASKS
1	Conduct regular monitoring of the herd	Conduct a minimum of one herd census within the life of this plan. Aim to conduct first census in 2010.
		Conduct annual composition surveys except in years when a census is conducted.
		Conduct 1-2 telemetry flights per year
		Coordinate the recovery of collars from dead caribou during annual composition surveys or telemetry surveys
		Coordinate the distribution of results summaries to working group members, USGS, and Environment Canada
2	Coordinate with research scientists in Alaska to determine a protocol for monitoring Chisana caribou	Coordinate with USGS during the development of a monitoring protocol for the CCH.
		Determine and identify available budget and staff resources
		Implement and maintain a collaring and monitoring program for a minimum sample of animals as per the monitoring protocol.
3	Dependent on results of a 2010 census, coordinate efforts among management agencies to recommend a harvest for the CCH	Based on 2010 census, working group will meet to determine if population trend and sex ratio meet the requirement to re-open the herd to hunting (Figure 2).
		Should the population meet the required indicators, recommend to the responsible management authorities that the herd be permissible for harvest by 2011.
		Consider appropriate means for harvest allocation (see Appendix D for a proposed harvest allocation strategy).
		If required, remove designation of the CCH as "Specially Protected" under Yukon's *Wildlife Act*.
4	Based on continued monitoring of the CCH, as per the monitoring schedule above, close all harvest of the CCH when herd population trends and sex ratios fall below threshold indicators for maintaining a stable or increasing herd	As per monitoring schedule in Table 1, continue to monitor herd through annual composition counts and set herd censuses.
		Determine from annual composition counts or censuses if the population falls below threshold indicators (Table 1) for a safe and sustainable harvest.
		Close the harvest of CCH in Yukon and Alaska if the population has fallen below indicators.
5	Coordinate the collection of habitat information with other ongoing research and monitoring work in the CCH range	When feasible, collect fecal pellets where possible during surveys or when recovering collars
		When feasible, collect baseline vegetation data where possible during surveys or when recovering collars

6	Encourage and take advantage of research opportunities to increase our current knowledge of habitat within the CCH range	Where possible, engage with academic institutions that may have interested graduate students and address research questions.
		Identify available sources of funding that could be used to fund habitat-related research in the CCH range, as needed.
7	Conduct one wolf census within the life of this plan	Conduct survey of wolves in Yukon and Alaska portions of CCH range
		Complete survey report and plain language document
		Compare wolf census data with trends in CCH statistics.
8	Promote and encourage continued trapping of wolves in Alaska	Host trapping clinics for wolf trappers in the Chisana region
		Identify priority areas for trapping within or adjacent to the CCH range. Share information with Alaska trappers.
9	Promote and take advantage of research opportunities within the CCH range	Where possible, engage with academic institutions that may have interested graduate students and address research questions.
		Identify available sources of funding that could be used to fund research in the CCH range, as needed.
10	Conduct one moose survey within the life of this plan	Conduct one moose survey within the life of this plan
		Analyze data and provide written summary of results
		Compare results to recent census information from wolves and the CCH.
11	Develop and implement a communication plan for CCH	Develop communication plan and identify target audiences and key messaging
		Identify budgets and resources for implementing communication objectives
		Share information about herd management.
12	Coordinate awareness and communication, at critical periods, to the public and interested groups regarding harvest of the CCH	Develop and distribute appropriate communications to interested groups regarding the opening of a hunt on CCH
		Develop and distribute appropriate communications to interested groups regarding the closure of a hunt on CCH
13	Implement the plan in a manner that improves cooperation and communication among partners	Inform partnering management authorities regarding the availability of resources for implementing various sections of the plan including monitoring and research.
		Communicate and share new information, as it may become available
14	Review and renew the plan in a timely and effective manner	Review the status of actions included within this plan.
		Renew or extend plan. Priorities and budgets should be identified during review.